Name:_____ Date:_____

Unit 1 **Lesson 0**

Do Now: What differences do you notice between the following two numbers?

$\sqrt{2}$ **and** 1.356356

AIM: WHAT ARE THE DIFFERENT TYPES OF NUMBERS?

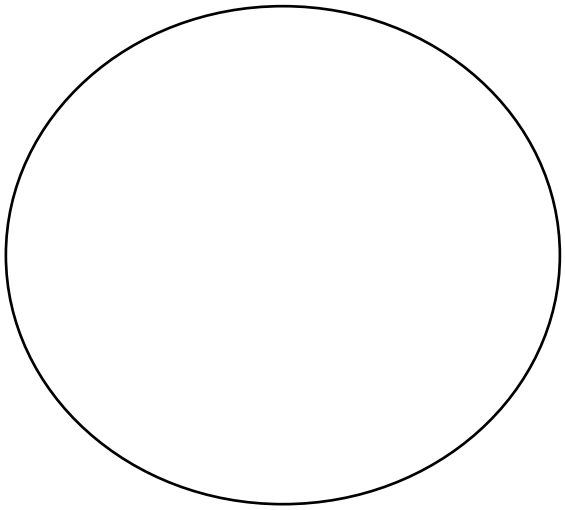
Rational vs Irrational Numbers

_____ **Number:**	_____ **Number:**
Terminating or repeating decimal. Numbers that can be written as a fraction	Non-terminating or non-repeating decimal. Numbers that can NOT be made into a simple fraction

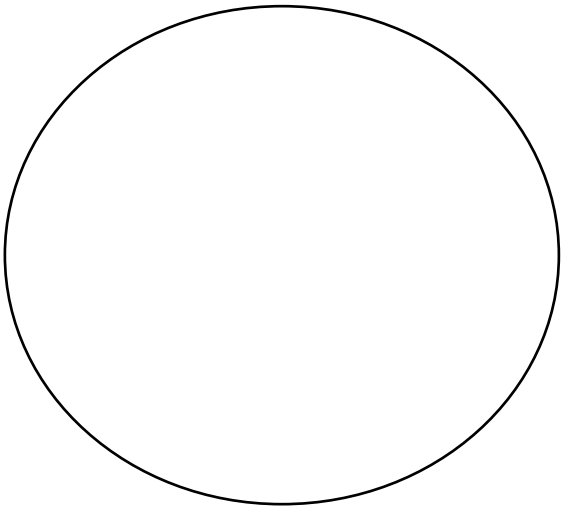
1. Place the following numbers in the correct bubble

Numbers: $2.45,\ \pi,\ 34\frac{1}{2},\ -3.4224222\ldots.,\ 1.5,\ .75,\ \sqrt{10},\ \sqrt{16}$

Rational Numbers



Irrational Numbers



2. Write the following as decimals.

$1.55 + \sqrt{7}$	$\frac{9}{2} + \sqrt{3}$

Rule: The sum of a rational number and an irrational number will always be _____

3. Given the following information

$$L = \sqrt{2}$$
$$M = 3\sqrt{3}$$
$$N = \sqrt{16}$$
$$P = \sqrt{9}$$

Which expression results in a rational number?

(1) L + M
(2) M + N
(3) N + P
(4) P + L

4. For which value of P and W is $P + W$ a rational number?

(1) $P = \frac{1}{\sqrt{3}}$ and $W = \frac{1}{\sqrt{6}}$
(2) $P = \frac{1}{\sqrt{4}}$ and $W = \frac{1}{\sqrt{9}}$
(3) $P = \frac{1}{\sqrt{6}}$ and $W = \frac{1}{\sqrt{10}}$
(4) $P = \frac{1}{\sqrt{25}}$ and $W = \frac{1}{\sqrt{2}}$

5. Simplify.

$\sqrt{3}g\sqrt{8}$	$\sqrt{8}g\sqrt{2}$

The product of 2 irrational numbers will sometimes be _____ and sometimes be _____.

6. Given the following expressions:

I. $-\frac{5}{8} + \frac{3}{5}$
II. $\frac{1}{2} + \sqrt{2}$
III. $(\sqrt{5})(\sqrt{5})$
IV. $3 \cdot (\sqrt{49})$

Which expression(s) result in an irrational number?

(1) II, only
(2) III, only
(3) I, II, IV
(4) II, III, IV

7. Which statement is *not* always true?

(1) The product of two irrational numbers is irrational
(2) The product of two rational numbers is rational
(3) The sum of two rational numbers is rational
(4) The sum of a rational number and an irrational number is irrational

8. Which statement is *not* always true?

   (1) The sum of two rational numbers is rational.

   (2) The product of two irrational numbers is rational.

   (3) The sum of rational number and an irrational number is irrational

   (4) The product of a nonzero rational number and an irrational number is irrational

9. Determine if the product of $\sqrt{2}$ and $8\sqrt{18}$ is rational or irrational. Explain your answer.

10. Jacob is working on his math homework. He decides that the sum of the expression $\frac{1}{3} + \frac{6\sqrt{5}}{7}$ must be rational because it is a fraction. Is Jacob correct? Explain your reasoning.

11. Ms. Cronin asked her class "Is the sum of 4.2 and $\sqrt{2}$ rational or irrational?" Patrick answered that the sum would be irrational.
    State whether Patrick is correct or incorrect. Justify your reasoning.

12. State whether the following number is rational, or irrational. Explain your reasoning.

Number	Rational or Irrational	Explanation
0.21		
$\sqrt{21}$		
$\sqrt{21} + 2.1$		
$(\sqrt{21} + 4)(\sqrt{21} - 4)$		